**CPWF Nile Project 2:**

**Integrated rainwater management strategies – technologies, institutions and policies**

**FIELD VISIT**

**HYDROLOGY RECONNAISSANCE**

**August 4th – August 13th 2010**

Birhanu Zemadim, Matthew McCartney and Gerba Leta

**Background**

The objective of the CPWF-N2 project is to identify appropriate rainwater management strategies (RMS) (combining technologies, policies and institutions) for well defined areas of the Ethiopian Highlands. The research is being conducted in areas (called “study landscapes”) representing dominant agroecological zones and farming systems. Three study landscapes have been selected (Table 1).

**Table 1:** S*elected study landscapes*

|  |  |  |  |
| --- | --- | --- | --- |
| Study Landscape | Woredas | Predominant farming systems | Mean annual rainfall (mm) |
| Nekemte | Gimbi and Diga | In the lowland maize & sorghum based agriculture (mono-cropping) is practiced with crop rotation every 3-4 years. In the midland, teff, millet & maize are important.  Farming system is: “Mixed crop-livestock system” | 1,376 – 2,037 |
| Jeldu | Jeldu | Potato is the dominant crop. Barley and teff are also common. Crop rotation is also practiced within the year with fallowing every third year.  Farming system is: “Mixed crop-livestock system” | 900 – 1,350 |
| Fogera | Fogera and Farta | Rice is the major crop followed by maize, millet & teff and barley.  Farming system is: “Mixed crop-livestock system” | 974 – 1,516 |

Within these study landscapes small representative catchments will be instrumented to provide insights into hydrological processes and water fluxes at different scales. The objective of this monitoring is to provide baseline data for evaluating RMS, and water-use and water productivity in different landscape components. Data obtained will be used in conjunction with computer models to evaluate the possible implications (including downstream impacts) of scaling up interventions. The intention is to install monitoring networks (comprising flow, rainfall, weather, soil moisture and groundwater measurements), after the 2010 rainy season. Data will be collected for two-years (i.e. 2011-2012).

This reconnaissance was undertaken to identify small catchments (5-20 km2) in which to install equipment. The reconnaissance of all three study landscapes was conducted between August 04th and August 13th 2010 by Matthew McCartney and Birhanu Zemadim of IWMI, with assistance from Gerba Leta of ILRI in Nekemte and Jeldu (Annex 1). The intention was to locate catchments (ideally one in each of the study landscapes) which are representative of the wider area and reasonably accessible for equipment installation. In addition the river at the catchment outlet needed to: i) comprise a clearly defined cross section with a stable bed; ii) be somewhere where it was possible to fix stage boards and other equipment; and iii) be a location where the river was always contained within the river banks. Preliminary map based searches, using 1:250,000 and 1:50,000 topographic sheets, were followed by field visits to assess the suitability of possible catchments.

This report briefly describes the study landscapes and the catchments selected. Photographs were taken of the areas visited and possible flow gauging stations. In each study area potential stakeholders (including local university staff, zonal and woreda officials, farmers and community leaders) were consulted about the key water issues. They were made aware of the project and its objectives as well as the intention to install hydrometric equipment. The stakeholders in all areas expressed a willingness to collaborate with the project. Details of institutes visited together with bureau heads and the contact details of potential experts in the three areas are annexed to this report (Annex 2).

**Nekemte Area**

*Description*

The Nekemte area, located in the south-west of the Abbay basin, is one of the highest rainfall regions of the Ethiopian Highlands. In some places mean annual rainfall exceeds 2,000mm. The Didessa River is the border between the Diga and Gimbi Woredas as well as the boundary between East and West Wollega. The reconnaissance focused on the Diga woreda, which is located to the west of Nekemte town and lies to the east of the Didessa River.

The Diga woreda varies in altitude from 1,200 to 2,342 masl and comprises two agro-ecological zones: the lowlands and midlands. The midlands are steep, formerly forested terrain which is being rapidly cleared of trees (plate 1). Large areas of forest have been cleared in the last 10 years. Scattered communities tend to cultivate the tops and bottoms of slopes because the slopes themselves are too steep. However, there is increasing cultivation of the slopes and hence increasing problems of erosion and loss of soil fertility. In some places all the top soil (sandy clay loams and sandy clay) has been lost. Once the productivity declines too far farmers simply move on, clearing yet more forest. In the midlands principal crops are teff, millet, maize, barley, niger seed and some coffee. In some places eucalyptus trees are planted as a final crop when nothing else will grow.



Plate 1: Typical view of the midlands in the Diga woreda

The lowland, bordering the Didessa River, is less steep than the midlands, comprising more rolling terrain (plate 2). In recent years there has been a large influx of people into the area. This is in part due to government relocation of people from the Harar region into what was previously (under the Derge regime) the Didessa State Farm. This farm located in the west of the woreda has been broken up and significant proportion of the land given to the settlers. Large areas are given over to communal grazing and there are problems of soil compaction and acidity. More settlers are following those that were relocated by the government. Crops grown in the lowlands are cereals (maize & sorghum), sesame, groundnuts and recently introduced soyabeans. On the old state farm there is still a large (220 ha) mango plantation and a eucalyptus forest (1,100 ha).



Plate 2: Typical view of the midlands in the Diga woreda

Most rivers drain approximately east to west, from the midlands, dropping steeply over the escarpment to the lowlands, before ultimately discharging into the Didessa River. Most rivers are perennial but in recent years scarcity of water during dry season for livestock and population has become a common phenomenon. In kebeles such as Bechbech and Degaga Didessa water is so scarce that people living in these areas have to travel up to 2 km to fetch water. Dry season shortage of water was also reported in kebeles around Jirata, Demeksa, and Garoma with seasonal drying of streams in these areas. Local experts attributed water scarcity to: i) population pressure; ii) lack of soil conservation measure to reduce erosion; iii) deforestation; iv) overgrazing

One large dam has recently been built in the midlands on the Meka River. This is to supply water to Nekemte town. The contributing area to the dam is 37km2. The rockfill dam is 18m high and 165m long and has inundated an area of about 400 ha. The dam is finished but the pumping station is not yet operational. It is not clear what impact this dam will have on downstream flows in the Meka River.

There is a lot of potential for irrigation, particularly on the flatter terrain of the lowlands. At least 7 of the 31 rivers in the Diga woreda have the potential to irrigate 300 ha each (i.e. a total of 21,000 ha). In the last season 1,769 ha has been used/developed for traditional irrigation. This irrigation is primarily on the Dimtu, Meka, Jirma and Keso rivers. Some farmers now have diesel pumps through a government scheme which distributed 21 pumps. It is possible that up to 330 ha are irrigated with pumps. On irrigated land farmers can grow 2-3 crops per year. In some places, *Bone*, a traditional practice of cultivating in wetland areas using residual moisture, is being undertaken. It is estimated that this is practiced on 1,879 ha in the Diga woreda. Some farmers have built small ponds and reservoirs, but currently there is seemingly little real interest in RWH.

There are plans for a 40-60 ha irrigation scheme to commence later this year in the lowlands on the Jirma River. In addition feasibility studies are presently being conducted for the establishment of a large irrigation scheme in the lowlands. This will include the construction of a dam across the Didessa River and irrigation of tens of thousands of hectares.

*Selected study catchment*

The Dapo River (a tributary of the Dimtu River) was selected as the primary catchment for instrumentation. A bridge (plate 3a) located on the main road from Diga to Arjo (09o03.141’ N, 36o17.650’E, altitude 1347 masl) provides a good point for flow monitoring. The river here is perennial. The catchment to this point is 17.97 km2, encompassing midland and the escarpment. The highest point in the catchment is 2011 masl. The catchment is reasonably representative of the land-use/land cover in the area (plate 3b). Most farmers produce a single crop of maize or sorghum each year. Crops observed close to the bridge were maize, mangoes and bananas. Within the valley bottom there is 300 ha of protected forest which is managed by a forest agency. There are some traditional irrigation diversions upstream of the bridge. The Soyoma primary school located at 1441 masl might provide a location for installing an automatic weather station, since there is always a watchman here.



Plate 3: a) Bridge over the Dopa River b) View of the catchment

If funds permit it would also be worth instrumenting the Chekorsa catchment. This is also a tributary of the Dimtu, but comprises a small lowland catchment (5.6 km2) with altitude range from 1,266 – 1,431 masl. A bridge (plate 4) located on the old state farm just to the north of Arjo ( 09o03.410’N; 36o13.978’E altitude 1268 masl) provides a reasonable location for flow monitoring. Crops cultivated in the catchment are maize and mangoes.



Plate 4: Bridge over the Chekorsa River

The nearest meteorological station to both these catchments is the synoptic station in Nekemte (09o04.960’N, 36o32.935’E, 2119 masl). This is an impressive station with most instruments functioning. The only instrument currently not functioning is the automatic raingauge. Measurements made every 3 hrs include: rainfall (manual), pitch evaporation, wind run and direction, solar radiation, sunshine hrs, wet and dry bulb, min and max temps, soil temperature (5cm, 10cm, 20cm, 50 cm and 100cm).

**Jeldu Area**

*Description*

The Jeldu area is located in the south of the Abbay basin to the north-east of Ambo. With altitudes ranging from 1,328 to 3,200 masl it is predominantly a highland area. Rainfall varies from 900 mm in the lower parts of the area to 1,350 mm at higher altitudes. The major river draining approximately south-north is the Meja River, a tributary of the Melka River which joins the Gora River and then flows into the Guder River. The Meja River originates at high altitude just outside Jeldu woreda in the Ginchi woreda. The headwaters are in a flat wide valley, which is a wetland heavily utilized for livestock grazing (plate 5a). It then drops steeply and flows through a relatively narrow deeply incised valley. Numerous tributaries drain into the Meja from both the east and west. These are also deeply incised – mountain streams - with relatively small catchments (i.e. typically 3-4 km2) (plate 5b).



Plate 5: Meja River catchment: a) the upper catchment – a broad valley b) mid-catchment - deeply incised valley

Most communities live on the ridge tops but cultivate the steep valley sides. Slopes of up to 80o are being cultivated. Where slopes are too steep for tilling by oxen people use hoes. Principal crops in the highland area are barley, potatoes and beans. The area has been heavily deforested in the last 10-20 years and erosion is a major problem. Both slope slumping and gulleying are common phenomena (plate 6). Farmers plant eucalyptus to try and halt this gulleying. Plantations of eucalyptus occupy approximately 10-15% of the landscape. One farmer reported that productivity had halved in recent years.



Plate 6: Gulleying in the catchment of the Meja River

In the Jeldu woreda 23 kebeles are food insecure. However, it is not clear if any of these lie inside the Meja catchment. Seasonal water scarcity was reported as a problem. Within the catchment there are some traditional diversions for irrigating potatoes, maize and onions.

*Selected study catchment*

On a previous field trip to Jeldu (30/05/10), it was decided that flow monitoring should be undertaken at a bridge (09o17.519’N 38o01.811’E altitude 2456 masl) on the road from Gojo (the capital of the Jeldu province) to the small town of Chobi (plate 7). This provides a stable point for installing equipment and developing a rating curve. However, the catchment area to this point is 92.62 km2, which is really too big for this project. Consequently, during the reconnaissance possible sites (i.e. smaller catchments) upstream, both on the main stream and tributaries, were investigated.



Plate 7: Bridge over the Meja River

No ideal sites were found and only one possibility can be considered. This is a fast flowing, turbulent and rocky section of the main Meja river in the middle of the catchment, approximately 11 km upstream of the road bridge and immediately downstream of a traditional bridge that crosses the river (09o12.997’N, 38o05.466’E, 2773 masl) (plate 8). Here a staff gauge and other equipment could possibly be fixed to the rocky steep sided right hand bank of the river. However, this would be difficult (equipment would need to be bolted to the rock from the river) and the catchment is still rather large (32.73 km2). There is no road, but tools and equipment could be brought to the site (approx 2 km from the road) using horses. Time did not permit further investigation, but it is proposed that another visit is undertaken to try and identify a better upstream location, perhaps close to the headwaters where the river first drops into the steep valley.



Plate 8: One possible location for an upstream flow gauge is on the right hand bank, at the point where these trees come close to the river.

The Tugera Kubek village located on the western side of the catchment might provide a good location for an automatic weather station and/or a raingauge. There is a fenced school. This village is accessible from a track to Bisho in the dry season. The synoptic station at Ginchi (09o01.390’N, 38o10.839’E altitude 2219 masl) is the nearest meteorological station to the catchment. This station makes similar measurements to that at Nekemte and appears to be well maintained.

**Fogera Area**

The Fogera area is located in the north-east of the Abbay basin, to the east of Lake Tana. It comprises a large flat floodplain in the vicinity of the lake and contributing hilly catchments to the east. The altitude varies from 1,784 to 3,600 masl. Rainfall varies from approximately 1,000 mm on the plains to about 1,500 mm at higher altitudes. The principal rivers, the Ribb and the Gumera drain east- west, discharging into Lake Tana. In Fogera woreda 77 perennial and 38 intermittent rivers are recognized. There are also 155 springs that are used for domestic water supply and irrigation. According to the woreda office there are a total of 820 pumps.

The Fogera plains are extensively cultivated with large areas of rice (plate 9), vegetable (e.g. onion) and maize. This area has been converted from grazing to rice in the last 5 years or so. Farmers utilize traditional diversions and increasingly small pumps for irrigation. The water table is shallow; typically 2- 4 m and some farmers have wells. However, the wells cannot be dug too deep as they tend to collapse. Flooding is a problem during the wet season and though this keeps the soils fertile, waterlogging of maize is a problem (plate 9b). Flood embankments have been constructed on either side of the Gumera River close to the point where the main road north crosses it. However, flooding still occurs and these are currently being reinforced.



Plate 9: a) Rice grown on the Fogera plains b) waterlogged maize

According to the Amhara Water Bureau there are no major water problems on the plains. There are lots of rivers and the water table is high. However, local farmers reported that water scarcity is a major problem in the dry season because water is being diverted for upstream irrigation. In the catchment of the Irza River (a tributray of the Ribb) a small dam has been constructed at Brigena and water is being diverted for irrigation. In recent years dry season conflicts between upstream and downstream communities in this catchment have reached a level where the police have become involved.

In the midlands, the terrain is much steeper with rock inselbergs in some places (plate 10a). Crops commonly grown are finger millet, maize and sorghum. In this area the water table is deeper (ca. 12 -16 m) and the woreda office recommends the use of rainwater harvesting ponds in preference to digging wells. To date 18 trapezoidal ponds lined with geomembranes (plate 10b) have been constructed in different kebeles of the woreda: Qhuar Michael (2), Woji (1), Guramba (1), Diba (3), Meneguzer (1) and Wetemb (10). Each pond can store 129m3 of water, sufficient to irrigate approximately 0.25ha. The Woreda office is planning the construction of 67 new water harvesting structures over the next year. These structures will be located in different kebeles: Zeng (4), Amed Ber (4), Angoko (3), Woji (4), Diba (3), Guramba (4), Harida (4), Chalmut (2), Mntura (2), Wotemb (25), Addis BeteKirstian (2).



Plate 10: a) midlands in the Fogera woreda b) rainwater harvesting pond

A table on the wall of the Fogera woreda office provided irrigation statistics for the past 5 years (Table 2).

**Table 2:** *Irrigation statistics for the Fogera woreda*

|  |  |  |
| --- | --- | --- |
| Year (Ethiopian calendar) | Irrigated area (ha) | Production (quintels) |
| 1997 | 10,626 | 344,174 |
| 1998 | 10,970 | 510,380 |
| 1999 | 13,121 | 929,490 |
| 2000 | 12,515 | 1,115,195 |
| 2001 | 11,600 | 952,757 |

*Selected study catchment*

The Mizewa River (a tributary of the Irza River, which flows into the Gumara) was selected as the study catchment. The river flows roughly south-north. A bridge (plate 11) located on the main road from Woreta to Debre Tabor (11o55.765’N, 37o47.539’E, altitude 1,862 masl), just to the west of Weji provides a good point for flow monitoring. The catchment to this point is 27.0 km2. The river here is perennial. The highest point in the catchment is 2,391 masl. Just upstream of the bridge the river divides into two main tributaries. One the main Mizewa River has a catchment area of 18.80 km2, the other the Zinjero Gidel (or Ginde Newr) River has a catchment area of 7.42 km2. It should be possible to monitor the flow in both sub-catchments by fixing stage boards to trees immediately upstream of the confluence. The principal crop grown in the catchment is maize.



Plate 11: Bridge on the Mizewa River, looking from upstream

The Mizewa catchment is a “model” catchment for the woreda. This means that various interventions are showcased in it. These include soil conservation practices: terracing, zai pits, hydrobasins afforestation and protected areas. The Awuramba Village is located on the western edge of the catchment about 2km from the main road, along a track that is driveable in the wet season. Many of the interventions in the catchment have been undertaken by the people living in this village. The village leader (Dr. Zumhura) complained of water shortages in the dry season. He attributed this to upstream pumping and also the planting of eucalyptus trees. There are at least three locations within the catchment where water is pumped for irrigation. This is resulting in the drying up of the Ginde Newr in the dry season. The village uses this river for water supply. They also have a 126 m deep borehole (drilled by an NGO) but no pump to lift the water. Dr. Zumhura also said that, although there were none in his village, RWH ponds were failing for a variety of “unforeseen” reasons.

The Awurambo village (11o55.377’N, 37o46.780’E 1920 masl) is a possible location for an automatic weather station and/or raingauge. It takes 2.5 hours to walk from Weji to the Gibra Iyesus church located in the headwaters of the catchment. The synoptic station at Bahir Dar is the nearest meteorological station to the catchment. The Watershed Monitoring and Evaluation component of the Tana-Beles Integrated Water Resources Development Project project is conducting a hydrological baseline survey in 15 micro-watersheds (4 – 10 km2) in the Ribb and Gumera catchments. The intention is to identify the impact of soil and water conservation practices on sediment transport. Catchments have been instrumented with stage boards and rain gauges. Sediment samples are collected regularly. Seifu Admassu, a lecturer at Bahir Dar University is conducting a similar study on the Debre Mawe catchment (0.90 km2) (south of Lake Tana, near Adet) for his PhD. This catchment has been divided into 4 subcatchments and is intensively instrumented with piezometers and rain gauges. The objective of this study is to identify sediment sources.

**Summary**

Catchments for hydrometric monitoring have been indentified in each of the study landscapes (Table 3; Figure 1). Another visit to Jeldu is recommended to try and locate a better upstream location for a flow gauging station on a smaller catchment. Key issues in each of these catchments have been deduced and some potential stakeholders contacted. Senior representatives of Wollega University, Ambo University and Bahar Dar University all expressed an interest in collaborating with IWMI/ILRI on this and the other CPWF Nile projects.

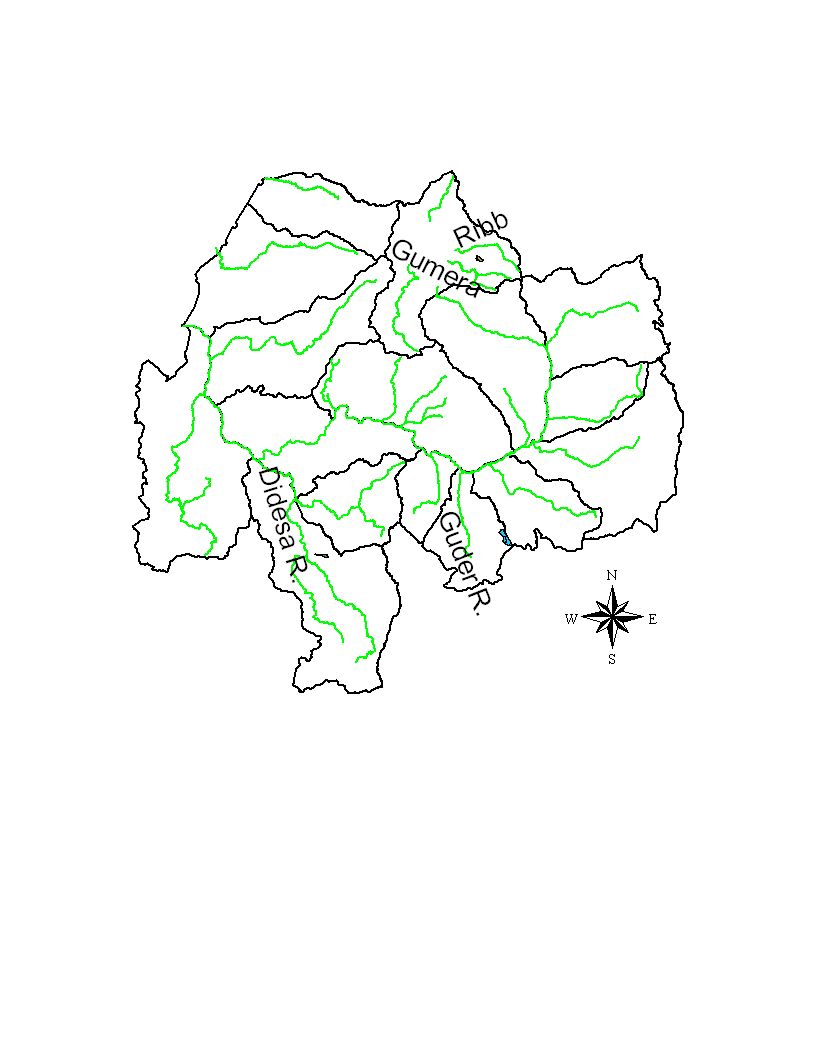
Table 3: Selected gauging sites

|  |  |  |  |
| --- | --- | --- | --- |
|  | Location | Catchment Area (km2) | Altitude range (masl) |
| **Nekemte** | | | |
| Dapo River at bridge on the Dinga to Arjo road | 09o03.141’ N, 36o17.650’E | 17.97 | 1,347 – 2011 |
| Chekorsa at bridge on the old State farm+ | 09o03.410’N; 36o13.978’E; | 5.60 | 1266 – 1431 |
| **Jeldu** | | | |
| Meja River at bridge on the Gojo to Chobi road | 09o17.519’N 38o01.811’E | 92.62 | 2,456 - 3206 |
| u/s site tbd |  |  |  |
| **Fogera** | | | |
| Mizewa river at bridge on the Woreta to Debre Tabor road | 11o56.174’N; 37o47.154’E | 27.0 | 1,862 – 2,391 |
| Upstream site on the Mizewa River | 11o55.765’ N 37o47.539’E | 18.80 | 1,875 – 2,391 |
| Upstream site on the Zinjero Gedel River | 11o55.741’N 37o47.538’E | 7.42 | 1,872 – 2,290 |

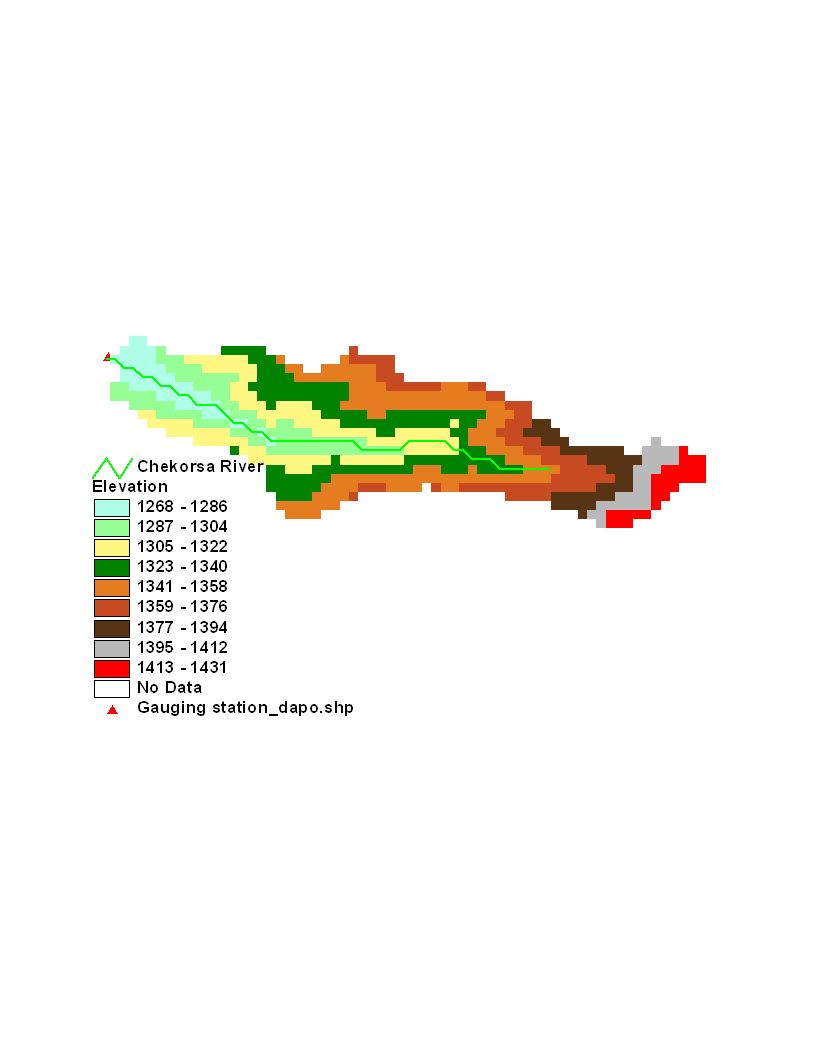
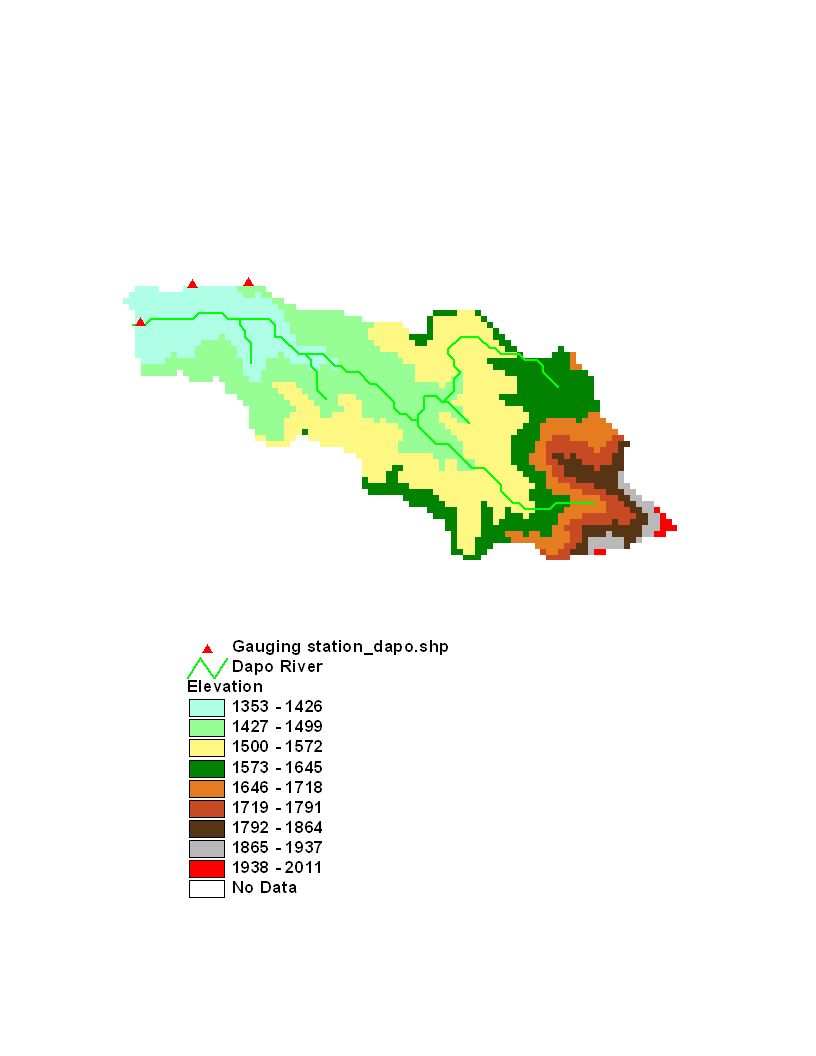
+ flow gauging to be installed if funds available

**Next steps**

* Birhanu to participate in training in the use of current meters and installation of pressure transducers, organized by the Watershed Monitoring and Evaluation component of the Tana-Beles project (20-21 August)
* MOUs to be developed and signed with the three collaborating Universities (immediately following the inception workshop)
* Hydrometric equipment to be identified, purchased and shipped to Ethiopia with the intention of installing this equipment in all three study catchments in November and December 2010.
* Monitoring to be undertaken from January 2011 to December 2012

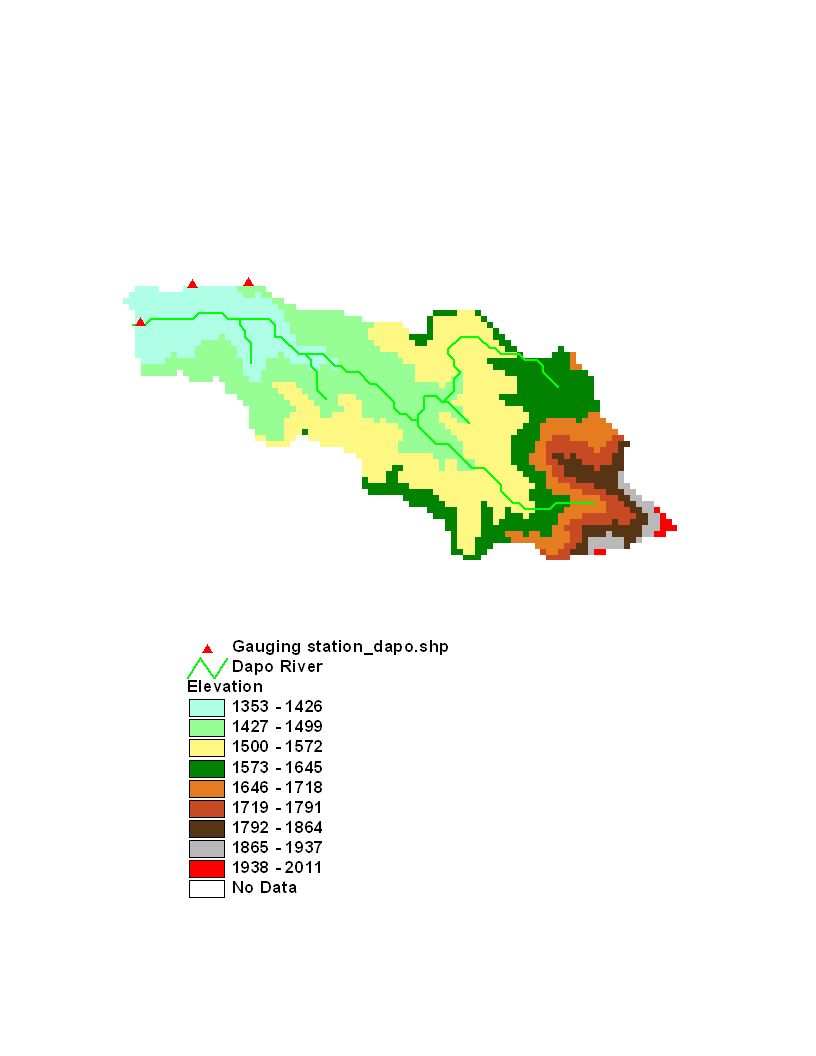


**Upper Blue Nile basin with major rivers and subbasins**



Church

School



Dapo

at the Bridge

**Area**

**18.0 km2**

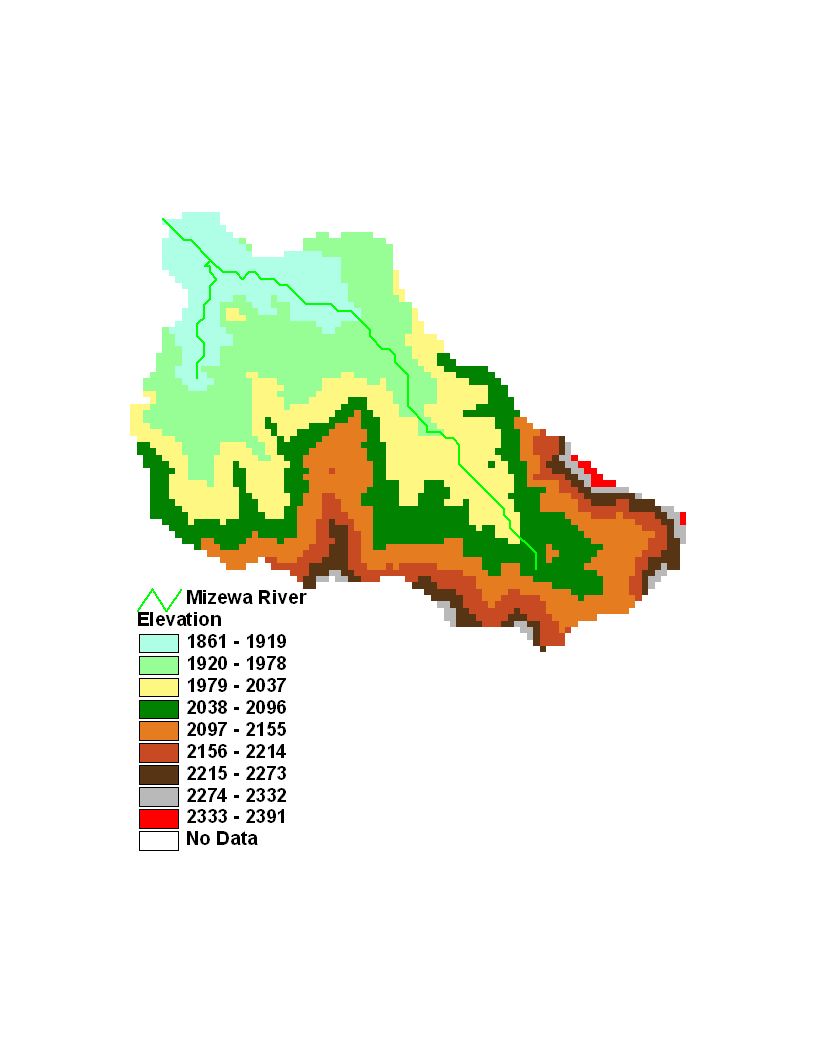
**Nekemt Area**

Chekorsa

at the Bridge

**Area**

**5.6 km2**



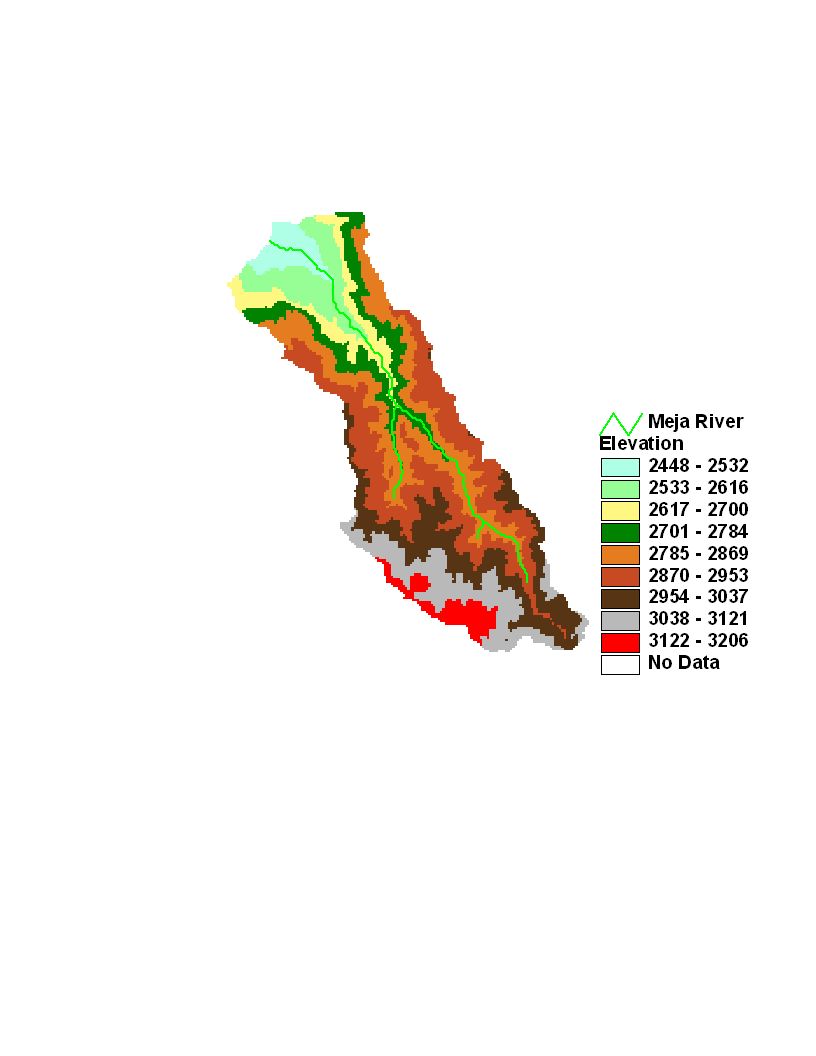
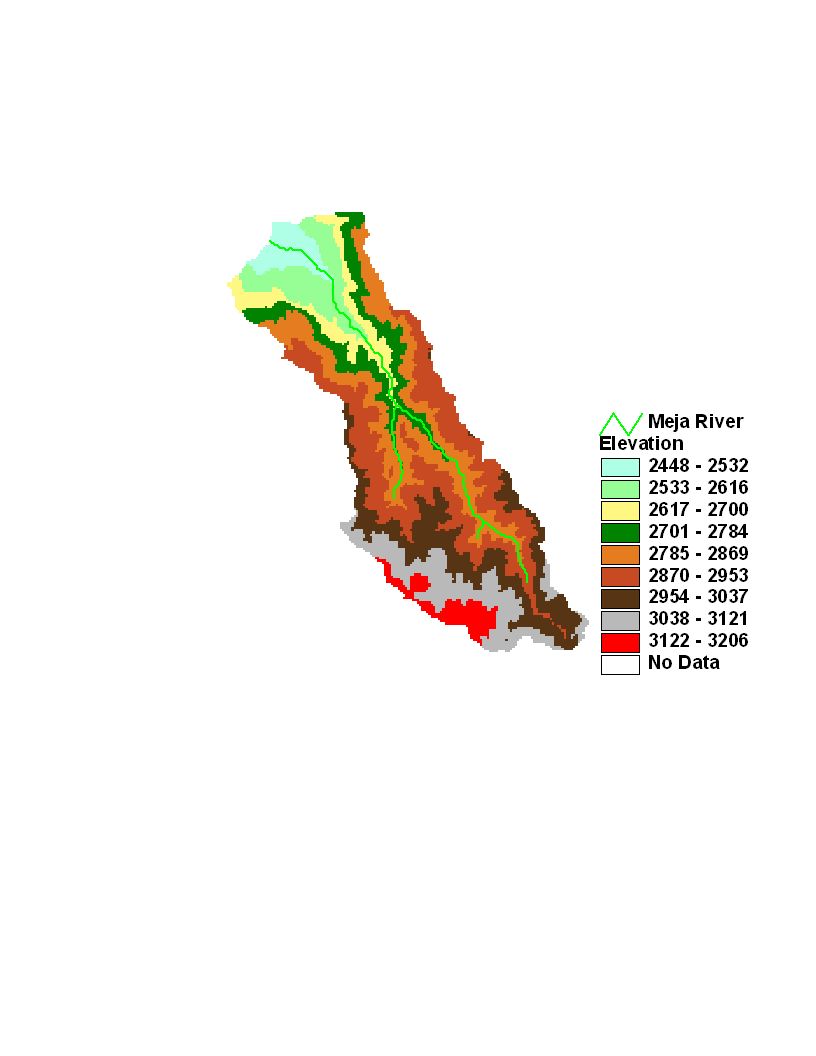
**Fogera Area**

**Area**

**27.0 km2**

Mizewa

at the Bridge



Meja

at the Bridge

**Jeldu Area**

**Area**

**92.6 km2**

Figure 1: Proposed catchments for the hydrological investigations

**Annex 1: Diary**

|  |  |
| --- | --- |
| **Date** |  |
| Wednesday 04th August | Drove to Nekemte |
| Thursday 05th August | Met with Diga woreda officials  In the field with Mr Shibru Gurmessa (Natural Resources team leader Diga Woreda)  Met with senior staff at Wollega University |
| Friday 06th August | In the field with Mr Dereje Adeba (hydrologist Wollega University)  Met with Mr Desta Mideksa (Water Enterprise Works)  Met with Mr Berhanu Yedeta (Zonal Water Resources Bureau) |
| Saturday 07th August | Drove to Jeldu  Met with Jeldu woreda officials  Visited the bridge at the catchment outlet |
| Sunday 08th August | In the field with Mr. Ajema Dewo (Head, Rural Water Supply Construction)  Drove to Ambo |
| Monday 09th August | Met with senior staff at Ambo University  Drove to Addis |
| Tuesday 10th August | Drove to Bahar Dar |
| Wednesday 11th August | Met with officials of the Amhara Water Resources bureau  Met with senior staff at Bahar Dar University  In the field  Met with officials of the Fogera woreda |
| Thursday 12th August | In the field with Mr. Kassew Adamtew (Fogera woreda irrigation expert)  Met with team from the Watershed Monitoring and Evaluation component of the Tana-Beles Integrated Water Resources Development Project |
| Friday 13th August | Returned to Addis |

**Annex 2: People contacted during the reconnaissance visit**

**Nekemt Area**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No | Name | Organization | Responsibility | Contact Address |
| 1 | Mr. Shibru Gurmessa\* | Diga Agricultural and Rural Development Bureau | Natural Resources Team Leader | 0911026757 |
| 2 | Mr. Alemu Biratu | Diga Agricultural and Rural Development Bureau | Deputy Head |  |
| 3 | Mr. Endibu Alemayehu | Diga Agricultural and Rural Development Bureau | Rural water supply and sanitation Expert |  |
| 4 | Mr. Ulfata Idossa | Soyoma Primary school | Administrator | 0917137560 |
| 5 | Mr. Gedu Dias | Wollega University | President’s Representative |  |
| 6 | Mr. Teshome Takele | Wollega University | Academic Program Director | 0911486051 |
| 7 | Dr. Tujuba Jergefa | Wollega University | V/P Representative |  |
| 8 | Mr. Daniel Masresha\* | Wollega University | Plan and Project Director | 0911907782  [Danielmasresha@yahoo.com](mailto:Danielmasresha@yahoo.com) |
| 9 | Mr. Dereje Daba\* | Wollega University | Hydrologist, Irrigation & Water Resources | 0911369662  [Dereje.adeba@yahoo.com](mailto:Dereje.adeba@yahoo.com) |
| 10 | Mr. Aklilu Agemsa | Dimtu Kebele | Chair Person | 0917049668 |
| 11 | Mr. Tesfu Wagara | Dimtu Kebele | Administrator | 0910236883 |
| 12 | Mr. Desta Mideksa | Nekemte Water Works Enterprise | Bureau Head | 0911950964 |
| 13 | Mr. Birhanu Yadeta\* | Zonal Water Resources Bureau, Nekemte | Bureau Head | 0917816171  0576613385  [Biraanu2006@yahoo.com](mailto:Biraanu2006@yahoo.com) |

**Jeldu Area**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No | Name | Organization | Responsibility | Contact Address |
| 1 | Mr. Teshome Gudeta | Jeldu Water Resources Bureau | Bureau Head |  |
| 2 | Mr. Dagne Lichie | Jeldu Woreda Office of Agriculture & Rural Dev’t | Head, Natural Resources and Land Management |  |
| 3 | Mr. Ajema Dewo\* | Jeldu Water Resources Bureau | Head, Rural Water Supply Construction | 0913162068 |
| 4 | Dr. Mitiku Tesso | Ambo University | President | 0911217831  0112362017  [mitikut@yahoo.co.uk](mailto:mitikut@yahoo.co.uk) |
| 5 | Mr. Lakew Wondimu\* |  | V/President (Academic) | 0911246256  [Lakew2452@yahoo.com](mailto:Lakew2452@yahoo.com) |

**Fogera Area**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No | Name | Organization | Responsibility | Contact Address |
| 1 | Dr. Andarge | Amhara Region Water Resources and Development Bureau | Deputy Bureau Head |  |
| 2 | Mr. Fasikaw Atanaw\* | Amhara Region Water Resources and Development Bureau | Head, Water Resources Administration and Management | 0918701064  [fasikawatanaw@gmail.com](mailto:fasikawatanaw@gmail.com) |
| 3 | Dr. Baylie Damtie | Bahir Dar University | V/President | 0918340164  [bayliedamtie@yahoo.com](mailto:bayliedamtie@yahoo.com) |
| 4 | Mr. Mengiste Abate\* | Bahir Dar University | Director, School of Civil and water Resources | 0911057510  [mengisteaba@gmail.com](mailto:mengisteaba@gmail.com) |
| 5 | Mr. Worku Mulat | Fogera Woreda Agriculture and Rural development | Bureau Head | 0918702671  [w.mulat@yahoo.com](mailto:w.mulat@yahoo.com) |
| 6 | Mr. Fisseha Mengiste | Fogera woreda along the Irza river | Local Farmer | 0918713663 |
| 7 | Mr. Kassew Adamtew\* | Fogera woreda Agriculture and Rural development | Irrigation Engineer | 0918010563  0584460064/65 |
| 8 | Dr. Zumhura | Awramba Village | Village Leader |  |
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\* Should be invited to the September inception workshop